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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,218	06/13/2001	Ansheng Liu	042390P11429	7592

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EXAMINER

PRITCHETT, JOSHUA L

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 01/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/881,218

Applicant(s)

LIU ET AL.

Examiner

Joshua L Pritchett

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### DETAILED ACTION

Applicant's election without traverse of Invention I (claims 1-9) in Paper No. 5 is acknowledged.

Nonelected Invention II including claims 10-29 have been cancelled by applicant in the amendment filed January 8, 2003.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan "Fiber Grating Spectra" in view of Willner "Tunable Compensation of Channel Degrading Effects Using Nonlinearly Chirped Passive Fiber Bragg Gratings".

Regarding claims 1 and 3, Erdogan teaches an optical path with a first and second end capable of reflecting a first and second wavelength back out of the first end of the optical path (Fig. 4a.). Erdogan teaches an optical path that reflects a wavelength back out of the first end of

the path based on the effective refractive index based on the equation  $\lambda = 2n_{\text{eff}}\Lambda$ . Erdogan does not specifically reference tuning the refractive index in the optical path. Willner teaches tuning an optical path by changing the effective refractive index (page 1299 col. 1). Therefore, by changing the effective index based on the teachings of Willner the path taught by Erdogan would reflect any number of wavelengths back out of the first end of the optical path. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Willner with the teachings of Erdogan for the purpose of effective and efficiently tuning an optical path to reject certain wavelengths of light in order to provide a higher quality signal at the transmission end of the path.

Regarding claim 2, Erdogan teaches the confinement of the light in the optical path (Fig. 4a).

Regarding claim 7, Erdogan teaches the use of a Bragg grating to reflect an incident wavelength back out the first end of the path (Fig. 4a; page 1278 col. 2).

Regarding claim 9, Erdogan teaches the invention as claimed but lacks reference to changing the geometry of the path. Willner teaches changing the geometry of the path by stretching the path length (Fig. 2a.). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Willner with the Erdogan invention for the purpose of effective and efficiently tuning the optical path.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view of Willner as applied to claim 1 above, and further in view of Goodfellow (US 6,363,202).

Erdogan in combination with Willner teaches the invention as claimed but lacks reference to tuning the path using a temperature gradient or charge modulation. Goodfellow teaches the use of a heater to change the temperature and tune the optical path (col. 5 lines 23-27). Goodfellow further teaches the use of charge modulation to tune an optical path (col. 5 lines 23-27). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the heater taught by Goodfellow in combination with Erdogan and Willner for the purpose of quickly tuning the optical path through a variety of means.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view of Willner further in view of Goodfellow as applied to claim 5 above, and further in view of Kapany (US 6,480,513).

Erdogan in combination with Willner and Goodfellow teaches the invention as claimed but lacks reference to the claimed conductor-insulator-semiconductor structure. Kapany teaches the claimed conductor-insulator-semiconductor structure for using charge modulation to tune an optical path (Fig. 4B). It is well known in the art that cladding (48) can be made of plastic and the core (47) can comprise a semiconductor material, such as germanium (col. 6 lines 59-61). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the conductor-insulator-semiconductor structure taught by Kapany as an appropriate structure in charge modulation tuning of an optical path in the invention of Erdogan in combination with Willner and Goodfellow for the purpose of altering the state of the optical path without directly passing current through the path.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erdogan in view of Willner as applied to claim 7 above, and further in view of Kapany.

Erdogan in combination with Willner teaches the invention as claimed but does not teach depositing silicon or polysilicon periodically or quasi-periodically in the substrate. Kapany teaches a substrate comprising silicon (col. 6 lines 64-66). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Kapany with the invention of Erdogan in combination with Willner for the purpose of providing a means for effectively and efficiently tuning an optical path through the use of a variable reflections at the sides of the optical path.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jain (US 6,221,565) teaches charge modulation in tuning an optical path.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 703-305-7917.

The examiner can normally be reached on Monday - Friday 7:00 - 3:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding  
should be directed to the receptionist whose telephone number is 703-308-0956.

JLP  
January 23, 2003

  
**MARK A. ROBINSON**  
**PRIMARY EXAMINER**